Ford Pickup Box Removal Guidance

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Introduction

The following information is presented in three parts for vehicle alterers who intend to remove the pickup box from certain Ford pickup trucks and install aftermarket second unit bodies on those vehicles.

Part I details those Ford pickup models that may be altered by removal of the pickup box and installation of an aftermarket second unit body and indicates where specific questions should be directed.

Part II provides information concerning the obligations and responsibilities of vehicle alterers with respect to United States and Canada Motor Vehicle Safety Standards (F/CMVSS).

Part III provides information for vehicle alterers with respect to United States and California exhaust and evaporative emissions.

Vehicle alterers who intend to modify vehicles, as described above, may use the information and conditions provided herein to assist them in determining whether modified vehicles comply with applicable regulatory requirements.

PART I - Models Available for Pickup Box Removal

Ranger Pickups listed in Table 1 and Super Duty Pickups listed in Table 2 may be altered by removing the pickup box and installing an aftermarket Second Unit Body (SUB).

NOTE: Some Ford pickups have driver assist features such as Blind Spot Information System (BLIS) and Reverse Sensing System (RSS), which utilize sensors built into the tail lamps and rear bumper, respectively. Removing parts with integrated sensors will disable the dependent features and cause error messages in the instrument cluster. All eligible Super Duty and Ranger pickups can be re-configured using the Ford Diagnosis and Repair System (FDRS) tool, to deactivate affected features and avoid error messages. Rear Bumper Removal is not recommended on Ranger vehicles with Forward Sensing System.

It is the responsibility of the vehicle alterer to assure compliance and certification of the altered vehicle to all applicable requirements. Specific questions concerning compliance and/or certification to safety standards, emissions and fuel economy regulations should be directed to the vehicle alterer's legal counsel or the United States National Highway Traffic Safety Administration (FMVSS and Federal fuel economy standards and requirements), the Canada Ministry of Transport (CMVSS, emissions, and noise regulations), the Canada Department of Communications (Canadian RFI regulations), the United States Environmental Protection Agency (EPA) (United States emission requirements) or the California Air Resources Board (California emissions and fuel vapor recovery requirements), and the vehicle noise emission control authorities, if any, in the state and locality in which the vehicle is sold.

If you have technical, product-related questions concerning some aspect of the vehicle alteration, a representative of Ford Motor Company will be happy to talk with you. Please contact your regional sales office or email the Ford Body Builder Advisory Service (BBAS) by navigating to www.fordbbas.com and selecting "Contact Us".

PART II - Information Concerning United States and Canada Safety Standards

The vehicle alterer is responsible for determining continued conformity of the altered vehicle with F/CMVSS under 49 C.F.R. Part 567 and pursuant to Section 9 of the Canadian Motor Vehicles Safety Regulations in Canada. As outlined in these requirements, the vehicle alterer must ascertain which F/CMVSS are affected by the alteration, and subsequently affix a label that certifies that the altered vehicle conforms to all affected safety standards. In the information that follows, Ford has endeavored to provide sufficient guidelines to the vehicle alterer for certifying that the vehicle conforms to all F/CMVSS affected by the vehicle alteration.

Federal and Canadian Motor Vehicle Safety Standards Compliance

Conformity to the following FMVSS and CMVSS are affected by removal of the pickup box and rear bumper, and installation of an aftermarket second unit body:

F/CMVSS 105(1) – Hydraulic Brakes

F/CMVSS 108 – Lighting Equipment

F/CMVSS 111 – Rear View Mirrors

F/CMVSS 126(2) – Electronic Stability Control Systems

F/CMVSS 135(3) – Light Vehicle Brake Systems

F/CMVSS 204(4) – Steering Control Rearward Displacement

F/CMVSS 208 – Occupant Crash Protection

F/CMVSS 212(2) – Windshield Mounting

F/CMVSS 219(2) – Windshield Zone Intrusion

F/CMVSS 301(2) – Fuel System Integrity

Notes:
(1) Applicable to vehicles with a GVWR over 3500 Kg (7716 lb.).
(2) Applicable to vehicles with a GVWR of 4536 Kg (10,000 lb.) or less.
(3) Applicable to vehicles with a GVWR of 3500 Kg (7716 lb.) or less.
(4) Applicable to vehicles with a GVWR of 4536 Kg (10,000 lb.) or less and an unloaded vehicle weight of 2495 Kg (5500 lb.) or less.

In the case of a Ford pickup truck listed in Table 1 or 2, the vehicle, as altered, will continue to conform to the requirements of the previously listed safety standards provided the vehicle is altered only by the removal of the pickup box (including optional equipment attached to the pickup box) and rear bumper (optional), and the installation of an aftermarket Second Unit Body (SUB) in accordance with the following conditions:

1. The following lighting components must be designed and installed on the altered vehicle in accordance with the requirements of F/CMVSS No. 108, Lamps, Reflective Devices, and Associated Equipment:

   - Tail Lamps
   - Stop Lamps
   - License Plate Lamps
   - Back-Up Lamps
   - Rear Turn Signal Lamps
   - Rear Side Marker Lamps
   - Reflex Reflectors
   - Center High Mounted Stop Lamp (if the second unit body blocks the view of the factory installed CHMSL, an alternate CHMSL must be added)
   - Front and Rear Identification Lamps (for vehicles over 80 inches in width)
   - Front and Rear Clearance Lamps (for vehicles over 80 inches in width)

   The items of lighting equipment on the cab of the pickup truck (including wiring and power supply) must not be removed, modified, replaced, or altered. Further, the second unit body installed by the vehicle alterer must not impair the visibility and conformity to the photometric requirements of the lamps and reflective devices installed on the cab of the pickup truck.

2. FOR VEHICLES WITH GVWR OF 10,000 LBS OR LESS ONLY: The installed Second Unit Body (SUB) must meet the following criteria:

   - FOR RANGER ONLY: Not less than the SUB Minimum Weight listed in Table 1.
   - FOR SUPER DUTY ONLY: The front end of the SUB must be located at least 76.2 mm [3.0 in] rearward of the rearmost point of the cab.
   - Not greater than the weight calculated using the following formula:

     SUB max weight = Maximum Complete Vehicle Unloaded Vehicle Weight (UVW) from Table 1 or 2 – Original Equipment Manufacturer (OEM) Curb Weight as delivered + weight of permanently removed components.

     Weights of commonly removed components for reference:

     Pickup Box (Fully Trimmed)
     Ranger – 236 lb. [107.0 kg]
     Super Duty SRW - 445 lb. [201.8 kg]

     Rear Step Bumper (less Trailer Hitch)
     Ranger – 20 lb. [9.1 kg]
     Super Duty - 74 lb. [33.6 kg]

     Spare Wheel and Tire
     Ranger – 47 lb. [21.3 kg]
     Super Duty – See Table 3

   - The height of the Center of Gravity of the installed Second Unit Body must not exceed the value specified in Table 1 or 2 for the vehicle configuration. Figure 1 illustrates the SUB CG height reference locations for both Ranger and Super Duty.

3. FOR SUPER DUTY ONLY:

- The Vertical Center of Gravity of the Completed Vehicle (CG_v) in any loading condition must fall between the Maximum and Minimum limits as determined by the equations in Table 2 for the vehicle configuration. It is recommended that the Vertical Center of Gravity of the completed vehicle (CGv) not exceed 48 inches from the ground in any loading condition.
- The factory installed Trailer Hitch must not be removed on any vehicles with GVWR of 10,000 lbs. or less.

NOTE:

CG Restrictions listed in this document are only intended to ensure the completed vehicle will meet applicable F/CMVSS standards. The location of vehicle CG is also a significant factor in the stability and handling of the vehicle. It is the responsibility of the vehicle alterer to ensure that the vehicle achieves acceptable stability and handling performance in all loading conditions.

4. Fuel fill components must be replaced with those listed below (available through your local Ford Dealer).

Ranger:
- Fuel Fill Pipe – part number KB3Z-9034-C
- Fuel Fill Conversion Kit – part number KB3Z-9B149-A
- Fuel Cap – part number HC3Z-9030-A
- The carbon canister vent tube may be reused, or replaced with KB3Z-9A086-A.

Super Duty:
- Fuel Fill Pipe – part number
  MC3Z-9034-B for Diesel
  MC3Z-9034-G for Gas
- Fuel Fill Conversion Kit – part number
  HC3Z-9B149-E for Diesel
  LC3Z-9B149-C for Gas
- Fuel Fill Cap – part number
  LC3Z-9030-H for Diesel (Green)
  LC3Z-9030-B for Gas (Black)
  LC3Z-9030-J for Flex Fuel Gas (Yellow)

Fuel fill components must be installed as specified in the Super Duty Incomplete Vehicle Manual (IVM) or the Ranger Body Builder Layout Book (BBLB).

5. A rear-view camera that complies with FMVSS 111 requirements needs to be installed. See the Super Duty or Ranger Body Builder Layout Book (BBLB) for details.

6. Follow the guidance below if the OEM rear bumper is to be removed:

Ranger:
The trailer hitch is integrated into the rear bumper assembly. If the rear bumper is removed, it must be replaced with the appropriate trailer hitch listed below:

- KB3Z-17D826-A for Towing Pack 1
  (optional wiring harness: KB3Z-13A576-A)
- KB3Z-17D826-B for Towing Pack 2
  (optional wiring harness: KB3Z-13A576-B)

It is important to install the correct trailer hitch to maintain the towing capacity of your vehicle.

It is also possible to re-use the provided trailer hitch after removing the bumper and trimming the bumper support brackets (if desired). Caution must be exercised to maintain the integrity of the trailer hitch structure.

Super Duty:
To maintain the stated towing capacity of the vehicle, the structural brackets and associated fasteners highlighted in Figure 2 must remain installed on both sides of the vehicle, or must be replaced with "equivalent" structure.

NOTE: To avoid electrical system issues on Super Duty trucks with the pickup box and box wiring harness removed, install jumper harness LC3Z-13A409-J (available through your local Ford dealer) into the C408 connector at the right-hand rear of the vehicle frame.

NOTE: For Super Duty trucks with SuperCab body style, where a Second Unit Body wider than 80" is planned, consider installing Service Kit HC3Z-2821952-A on the rear door hinge. This will limit the SuperCab rear door opening angle to 90 degrees to prevent unintentional contact between the door and the SUB.

Other important information regarding second unit body (SUB) installation and compliance to safety regulations can be found in the Super Duty Incomplete Vehicle Manual (IVM). Further information that may be of use can be found in the applicable Body Builder Layout Book (BBLB) and in various SVE Bulletins, all of which are available online at https://fordbbas.com. Additional product related questions should be directed to the Body Builder Advisory Service at https://fordbbas.com under the "Contact Us" tab.

PART III - Information Concerning Exhaust and Evaporative Emissions Requirements

NOTE: The information herein is provided as guidance only; it is the responsibility of the vehicle alterer to assure compliance of the altered vehicle with the applicable emission requirements.

A copy of the appropriate Ford Owner's Manual and Warranty Guide must be installed in the altered pickup truck prior to sale to the ultimate purchaser to provide emissions system information and maintenance schedules.

Exhaust and Evaporative Emissions Requirements

As completed pickup trucks, Ford vehicles are certified to meet all applicable emissions requirements. For those Ford models authorized for pickup box removal, the alterer (or "secondary manufacturer") is responsible for determining continued conformity of the altered vehicle. Ford is providing the following information to assist the alterer in understanding their certification responsibilities.

Both the US Environmental Protection Agency (EPA) and California Air Resources Board (CARB) have provided guidance to secondary manufacturers on when they can rely on Ford's emissions certification and when they need to pursue their own certification. Additionally, Ford has requirements that must be met to maintain the original vehicle certification.

A. US Environmental Protection Agency Guidance

Guidance from the US Government is based, in part, on statements made by C. N. Freed of the Environmental Protection Agency (EPA) in a letter of July 13, 1979 to M. H. McBride, legal counsel for the Recreation Vehicle Industry Association. That letter explained EPA's policy concerning alterers of complete light-duty trucks in the context of EPA's Advisory Circular No. 64 – a March 7, 1977 publication that provides guidance on the need for separate certification of vehicles modified after original manufacture, but prior to sale and delivery to the ultimate purchaser. The maximum complete vehicle weight (UVW) provided in Tables 1 and 2 are calculated in accordance with the definition of "maximum vehicle weight" provided in the July 13, 1979 letter. The letter provides that alterers of complete light-duty trucks need not re-certify such vehicles for emission control purposes if:

1. The altered vehicles conform, in all material respects, to the design specifications in the original manufacturer's application for certification, and
2. The weight of the altered vehicle, including the weight of fuel at nominal tank capacity, is no more than 500 lb. above the "maximum vehicle weight."

The letter further states that no frontal area restrictions will apply to alterers who comply with conditions (1) and (2) above. Alterers who do not comply with these conditions will be considered "manufacturers" under the Clean Air Act and will be required to assure that the altered vehicles are certified.

Questions concerning EPA's policies, with respect to alterers of completed vehicles, should be directed to the alterer's legal counsel or the Environmental Protection Agency.

B. California Air Resources Board Guidance

Guidance from the California Air Resources Board is contained in the Dec 6, 2012 amended California Exhaust Emissions Standards and Test Procedures for Passenger Cars, Light Duty Trucks and Medium Duty Vehicles document. To paraphrase Part I, section H, paragraph 1.3, "Scope of Certification":

The original manufacturer's emissions certification is still valid if the vehicle modifications stay within the following guidelines:

1. The vehicle alterer does not increase the vehicle's unloaded vehicle weight by more than 10% over the maximum curb weight, does not increase the frontal area by more than 10%, or does not provide a combination increase of weight plus frontal area of more than 14%.
2. No axle ratio, tire size or tire type changes are made that would increase the drivetrain ratio by more than 5%.
3. The vehicle emissions control system is not modified.

Questions regarding these requirements should be directed to the alterer's legal counsel or the California Air Resources Board.

C. Ford Guidance

Ranger:

- For use in calculating EPA and CARB limits:
  - The "maximum" vehicle weight is provided in Table 1 (Max Completed Vehicle UVW).
  - The Frontal Area of an unaltered Ranger Pickup is 2.88 m^2 [31.0 ft^2].

Super Duty:

- 7.3L Gas Engine - For use in calculating EPA and CARB limits:
  - The "maximum" vehicle weight is provided in Table 2 (Max Completed Vehicle UVW).
  - The Frontal Area of an unaltered Super Duty Pickup is 3.80 m^2 [40.9 ft^2] for SRW and 4.28 m^2 [46.1 ft^2] for DRW.
- 6.2L Gas and 6.7L Diesel Engines – Emissions certification is valid provided the completed vehicle meets the conditions in Table 4.

NOTE: Frontal area of the vehicle includes the cab and second unit body. See the Frontal Surface Area Worksheet in the applicable Program BBLB for assistance with frontal area calculation.

Table 4 - Super Duty Emissions Restrictions for Pickup Box Removal

Engine	GVWR	Max Frontal Area m^2 [ft^2]	Max UVW kg [lb.]
6.2L Gas	4536 kg [10,000 lbs.] or less	5.57 [60.0]	4309 [9500]
	Over 4536 kg [10,000 lbs.]	5.11 [55.0]	5216 [11,500]
6.7L Diesel	4536 kg [10,000 lbs.] or less	3.81 [41.0]	4309 [9500]
	Over 4536 kg [10,000 lbs.]	4.74 [51.0]	4763 [10,500]

Table 1 - Ranger Models Available for Pickup Box Removal (1)

Body Style	Drive	WB mm [in]	Second Unit Body Limits		Max Completed Vehicle UVW kg [lb.]
			Min Weight kg [lb.]	CG Max Height mm [in] (2)	
Super Cab	4x2 4x4	3220 [126.8]	107.3 [236]	353 [13.9]	2300 [5060]

(1) Rear Bumper Removal is not recommended on Ranger vehicles with Forward Sensing System.
(2) Vertical height measured from the top surface of forward most box mounting bracket., see Figure 1.

Table 2 – Super Duty Models Available for Pickup Box Removal

Model	Body Style	Drive	WB mm [in]	GVWR	Completed Vehicle Vertical CG Limits		SUB Max Vertical CG Height mm [in] (3)(4)	Max Completed Vehicle UVW kg [lb.] (5)	
					Maximum inches (1)(2)	Minimum inches (1)(2)		6.2L Gas 7.3L Gas	6.7L Diesel
F250 F350	Regular Cab	4x2 4x4	3596 [142]	4536 kg [10,000 lbs.] or less	(3.85 * CG_h) - (1.43 * WB)	(3.85 * CG_h) - (2.51 * WB)	447 [17.6]	3547 [7819]	3515 [7749]
				Over 4536 kg [10,000 lbs.]	(4.55 * CG_h) - (1.43 * WB)	(4.55 * CG_h) - (3.21 * WB)	N/A	3547 [7819]	3515 [7749]
	Super Cab	4x2 4x4	3759 [148]	4536 kg [10,000 lbs.] or less	(3.85 * CG_h) - (1.43 * WB)	(3.85 * CG_h) - (2.51 * WB)	610 [24.0]	3547 [7819]	3905 [8608]
			4170 [164]	Over 4536 kg [10,000 lbs.]	(4.55 * CG_h) - (1.43 * WB)	(4.55 * CG_h) - (3.21 * WB)	N/A	3547 [7819]	3905 [8608]
	Crew Cab	4x2 4x4	4059 [160]	4536 kg [10,000 lbs.] or less	(3.85 * CG_h) - (1.43 * WB)	(3.85 * CG_h) - (2.51 * WB)	610 [24.0]	3547 [7819]	3905 [8608]
			4470 [176]	Over 4536 kg [10,000 lbs.]	(4.55 * CG_h) - (1.43 * WB)	(4.55 * CG_h) - (3.21 * WB)	N/A	3547 [7819]	3905 [8608]

(1) Completed Vehicle Vertical CG (CG_v) as measured from the ground.
(2) Completed Vehicle Horizontal CG (CG_h), as measured from the Centerline of the Front Axle, and Wheelbase (WB) must be expressed in Inches when used in the equations.
(3) As measured from the top surface of the frame rail 12 – 18 inches behind the cab, see Figure 1.
(4) Applicable to vehicles with GVWR of 10,000 lbs. or less.
(5) Applicable to vehicles with GVWR of 10,000 lbs. or less with respect to F/CMVSS Standards. Provided for vehicles with GVWR over 10,000 lbs. to aid in calculations regarding US EPA and CARB Emissions guidance (only applicable to vehicles with 7.3L Gas engine)

Table 3 – Super Duty Spare Wheel and Tire Weights

Wheel Size	Wheel Weight kg [lb.]
17" Painted Steel (SRW)	16.9 [37.2]
18" Painted Steel	20.4 [44.9]
Tire Size	**Tire Weight kg [lb.]**
LT245/75R17	20.7 [45.5]
LT275/65R18	23.7 [52.2]
LT275/70R18	25.4 [55.9]
LT285/75R18	27.0 [59.4]

Figure 1 – SUB CG Height Reference Locations

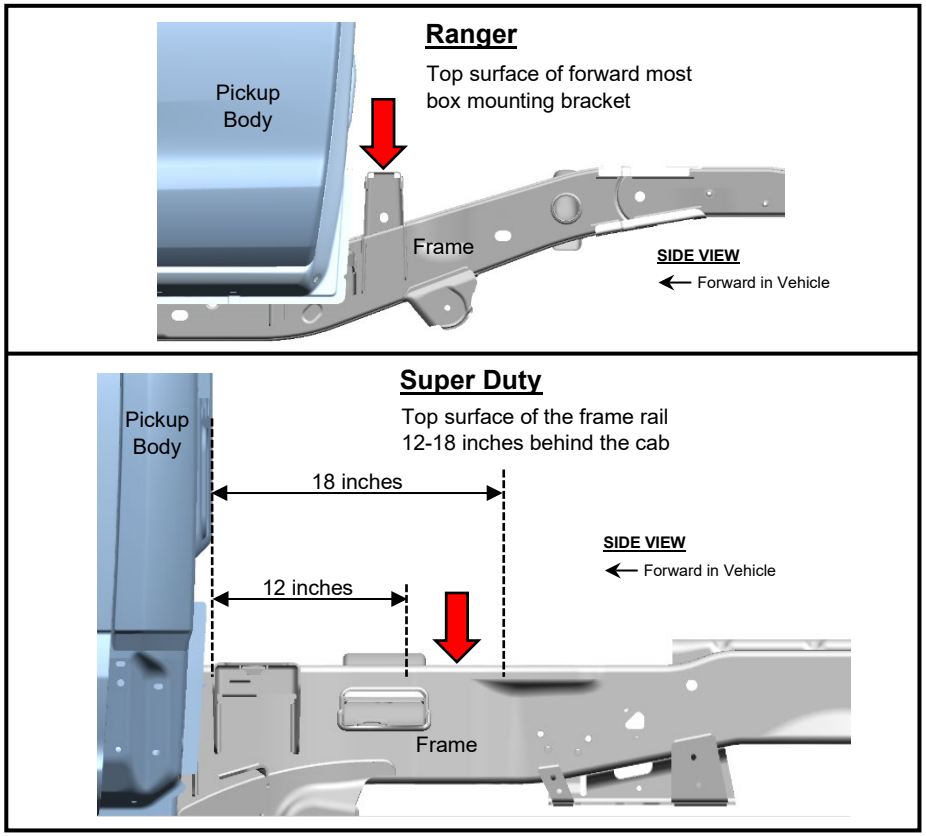
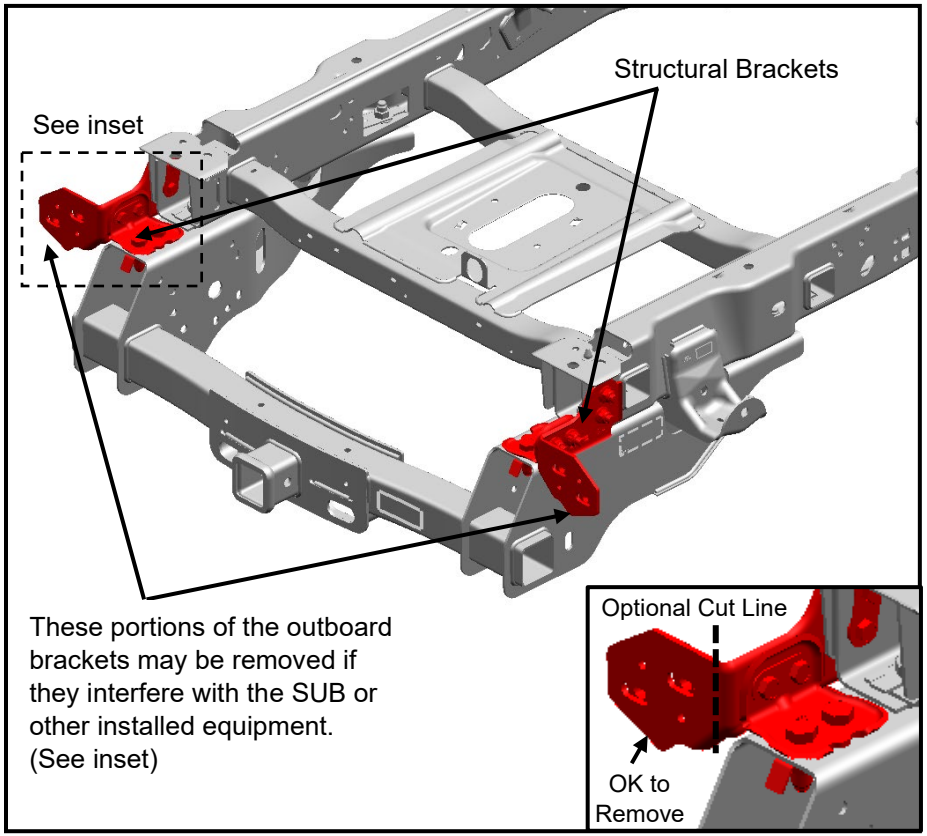


Figure 2 – Super Duty Structural Brackets


Structural Brackets
See inset
These portions of the outboard brackets may be removed if they interfere with the SUB or other installed equipment. (See inset)
Optional Cut Line
OK to Remove

Change Control

2022MY Revision 3 (6-Apr-2022) – Changes from 2022MY Revision 2:

- Added comment that "equivalent" structure may be used in place of the Super Duty structural brackets mentioned in Part II, Section 6 (page 3)
- Updated Super Duty Fuel Fill part numbers (page 3)

2022MY Revision 2 (19-Jan-2022) – Changes from 2022MY Revision 1:

- Clarified Ford Guidance on "Maximum" vehicle weight values to be used for EPA and CARB emissions calculations (page 4)
- Added clarification to Note 5 in Table 2 similar to above (page 5)

2022MY Revision 1 (23-Nov-2021) – Changes from 2022 Initial Release:

- Added comment about re-using Ranger trailer hitch (page 3)